

The characteristics of the Slav population are depicted by the author in lurid colours. The Slavs are, he asserts, clumsy, ignorant, drunken, superstitious, unclean and brutal. At the same time the Slav nature is good material to work upon. As the Slav comes in contact with Anglo-Saxons and learns their ways, his wants are increased and his tastes refined. The unsavoury details of squalor and vice among the Slav miners are certainly not understated by the author, who has naturally no sympathy with the ideas and aspirations of a people who, by adhering to their language and customs, remain unassimilated after years of residence in the United States. Similar statements are often made regarding the Slav immigrants in the coal-fields of Scotland and of Westphalia. Probably the Slav colliers of Pennsylvania are not more debased than the mining populations of many of the European coal-fields. If they are, the responsibility must rest largely with the coalowners, who provide habitations where self-respect and decency are unattainable luxuries.

The author's gloomy views regarding the social condition of the anthracite communities cannot be accepted without reserve. They are certainly not in accord with the views of the Anthracite Coal Strike Commission, who found that the social conditions obtaining in the communities made up largely of coalworkers were good, and that the number and character of the schools accessible in all these communities were fully up to the American standard. The number of churches in proportion to the population was rather above the average, and the opportunities generally for instruction appeared to be adequate.

The work is illustrated by twenty-eight half-tone plates, most of which are excellent, and there is a long bibliography of works consulted. The quotations in French, being printed without accents, are difficult for the ordinary reader to understand, and in one quotation, "Ellis il font diaque nuit," it is not apparent what language is used.

B. H. B.

OUR BOOK SHELF.

Elements of Water Bacteriology. By Samuel Cate Prescott and Charles-Edward Amory Winslow. Pp. x+162. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd.) Price 5s. 6d. net.

This little volume is practical in its conception, and is concise in treatment. It, of course, presupposes a sound knowledge of general bacteriological methods, but the authors have undoubtedly produced a manual for laboratory use which will be of value to all intelligently engaged in the examination of water. It is up to date in the various methods described, and thirty pages are devoted to a careful index of the contents, a list of memoirs referred to in the text, and the names of authors. Perhaps the most interesting feature in the book is the "change in front," so to speak, which it indicates some water-bacteriologists are making in regard to the relative importance of the presence of typhoid and colon bacilli respectively in water. A third of the letterpress is devoted to the *Bacillus coli communis*, its detection and its significance in water, whilst the typhoid bacillus, so long the *bête noire* of sanitarians, is disposed of in a few pages. The attitude of, at any rate, American authorities is effectively summed up in the following paragraph:—

"On the whole it seems that since a positive result is

always open to serious doubt, and a negative result signifies nothing, the search for the typhoid bacillus itself, however desirable theoretically, cannot be regarded at present as generally profitable."

So, because the typhoid bacillus is difficult to find and the detection of specific organisms is being clamoured for in the estimation of the bacterial quality of a water, refuge is taken in the more easily discoverable and well-nigh ubiquitous colon bacillus, or its allied forms.

It will be interesting to watch the progress of opinion on this colon-standard of water-purity in the light which it is hoped further researches may be able to throw on the detection and significance of specific bacteria in water.

The Chemistry of Coke. By W. Carrick Anderson, M.A., D.Sc. Second edition. (Glasgow and Edinburgh: Hodge and Co., 1904.) Price 5s. net.

THIS little volume, which has reached its second edition, contains much practical information about the chemistry and chemical analysis of coal and coke which should be useful to scientific makers of coke.

But apart from its practical side, the book would justify its publication if it served the single purpose of showing how scientific method may be applied to the problems of a relatively simple industry. That different coals of the same composition, or *isomeric coals*, as the author calls them, behave quite differently on coking is well known. This must, of course, arise from the presence of different chemical constituents. Perhaps it would have been wiser to remain content with the statement (p. 64) that "so long as the composition of coal is unknown the peculiar internal reactions of coking will assuredly remain shrouded in obscurity" than to hazard the suggestion (p. 60) that "in coking, side-chains as well as the central part or radicle reacts."

The absence of any reference to the relation of composition to by-products seems a curious omission when, as the author himself says, "the manufacture of coke without recovery of by-products is to-day frequently regarded as scarcely any longer a payable industry."

The writer would like to offer the suggestion that a careful microscopic examination of coal, which has been found so useful in other directions, might lead to interesting information both as to coking qualities as well as the nature of the by-products of different varieties of coal. Perhaps this method of investigation has already been tried and found wanting.

J. B. C.

Praktischer Leitfaden der Gewichtsanalyse. Zweite Auflage. By Paul Jannasch. Pp. xvi+450. (Leipzig: Veit and Co.) Price 8 marks.

A SECOND edition of Prof. Jannasch's well known book treating of gravimetric analysis has now appeared, and contains considerable additions of new matter. It is obvious, even from the most cursory examination, that the book differs from most of its class in that it is in no sense a compilation of old and often obsolete methods.

Prof. Jannasch is well known as the author of many new methods in analytical chemistry, and the results of his own work and that of his pupils have been made great use of in preparing the present volume.

The contents of the book are divided into nine sections, each of which deals with analyses of a particular type; thus, starting from the determination of the constituents of simple salts in the first, the second treats of the analysis of simple alloys, whilst the third, fourth, and fifth sections deal with the quantitative separation of the various metals one from another. By far the greater number of the processes recommended for these separations are those with which the author's name is connected, involving the use of hydrogen peroxide, hydroxylamine, and hydrazine.

The sixth and seventh sections contain instructions for mineral analysis, and one is struck by the very complete account given of methods by which the decomposition of the mineral is effected by heating in a current of gas, e.g. oxygen, hydrochloric acid, or bromine. The eighth section is taken up with silicate analysis, whilst the concluding section gives an account of the estimation and separation of the halogens and of many other analyses which do not naturally find a place in the earlier portions of the work.

Although it is clear that the author has taken great pains in the preparation of his book, it may be questioned as to whether the selection of exercises has been uniformly judicious, and as to whether the author's own processes do not occupy a too prominent position, so leading to the exclusion of standard methods of analysis with which every student should be familiar. For example, the author's process for the separation of manganese and zinc by means of hydrogen peroxide in alkaline solution, although found unsatisfactory by other investigators, is fully described to the practical exclusion of the more usual method. The same criticism applies to the larger proportion of the other "hydrogen peroxide separations" which here figure so largely. Again, in the section dealing with silicate analysis, the author's methods of decomposition, especially the one employing boric anhydride, are given at great length, whilst the ordinary method of alkali-carbonate fusion, which is constantly employed both in technical and scientific analyses, is given in a not very happily modified form, and in a subordinate position.

Although the book presents very many excellent features, and should, when used in conjunction with other works, be of great value, it is hardly considered likely that a student who derives his information solely from this source would possess a competent knowledge of the general methods of analytical chemistry.

H. D. D.

Practical Slide Making. By G. T. Harris, F.R.P.S. Pp. 134. (London: Iliffe and Sons, Ltd., 1904.) Price 1s. net.

NEARLY every photographer at some time or another makes his own lantern slides, and so numerous are the methods available, and so varied are the results that can be obtained, that another handbook on the subject is very welcome. In these pages the author successfully attempts to supply trustworthy information on the subject in a concise form, describing the best known methods for obtaining these transparencies. He lays stress on the great efficiency of some of the older processes, and with the hope that they may be revived he includes them in this book. The first two chapters deal with the apparatus for exposing the plate, and the remainder treat of the development by the several methods described, and of the various other manipulations required before the slide can be considered properly finished. No pains seem to have been spared to obtain accuracy in the formulæ and to render clear the methods of procedure, so that the book forms a trustworthy guide.

Botany Rambles. Part ii. *In the Summer.* By Ella Thomson. Pp. 130. (London: Horace Marshall and Son, 1904.) Price 1s.

THE young learners for whom this little book is intended are urged persistently to see for themselves, by examining plants, that what is told them in the lessons is true. They are instructed in simple language how to set about this work of verification and are urged to make use of their own eyes to find out additional facts for themselves. It is evident that the writer understands children and knows how to arrest their interested attention.

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LETTERS TO THE EDITOR.

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The Exradio Spectrum.

FROM a private communication from Mr. Baxendall, I learn that he has noticed the following correspondences between the spectrum of the emanation from radium (exradio) and the spectra of "bright line stars" (Campbell, *Ast. and Ast. Phys.*, vol. xiii. p. 468):—

"Exradio."	Bright Line Stars (Campbell).
5805	5813
5595	5593*
4690	4688
4650	4652
4630	4633

With the exception of 5593*, these stellar lines are all strong and characteristic. Another of the exradio lines, 5137, may correspond with 5135.

I am very ignorant of stellar spectra, and send this note merely to direct attention to a possible correspondence.

University College.

WILLIAM RAMSAY.

The Occurrence of Radium with Uranium.

A LITTLE time back, Mr. B. B. Boltwood published in this Journal (May 26, p. 80) a preliminary notice of an investigation of the ratio of uranium to radium in various minerals. I have for some time been engaged in a similar investigation, which, though the results are not yet matured, seems to be leading to the conclusion that this ratio is constant, as in Mr. Boltwood's experiments. An interesting case is the mineral torbernite, or copper uranite. This mineral forms transparent green tetragonal crystals the composition of which is accurately represented by the formula $\text{CuO} \cdot 2\text{UO}_3 \cdot \text{P}_2\text{O}_5 \cdot 8\text{H}_2\text{O}$. The substance dissolves easily in sulphuric acid, forming a perfectly clear green solution. This solution, when boiled, gives the radium emanation, and the quantity of emanation produced in one day is about the same as that yielded by the same weight of Joachimsthal pitchblende. The percentage of uranium is also about the same. If the radium in this mineral has been produced since the formation of the mineral (and the recent quantitative experiments of Sir W. Ramsay and Mr. Soddy on the absolute rate of production of the emanation seem to make that certain), there is practically no choice as to what the parent substance should be. Uranium is the only candidate. The great complexity of most of the radio-active minerals may make it difficult to obtain conclusive evidence by studying them. But here there seems to be no alternative but to conclude that uranium is the parent.

R. J. STRUTT.

Residual Affinity.

SIR OLIVER LODGE'S highly suggestive letter (June 23, p. 176) will be welcome to the many chemists who have been endeavouring to interpret chemical phenomena in terms of the electronic theory of the physicist. The proposition that the "Faraday tube" may be subdivided would appear to be capable of being widely applied in connection with many of the most interesting phenomena of chemistry. Thus not only would the existence of water of crystallisation and the formation of so-called molecular compounds be thereby brought into line with the more typical manifestations of valency, as pointed out in Sir Oliver's letter, but it would appear that it may possibly enable the hitherto conflicting hydrate and dissociation theories of solution to be harmonised. Thus in the case of an electrolyte such as sodium chloride, we should in the dry state regard the sodium atom united to the chlorine atom by means of a Faraday tube or bundle, as it may more appropriately be designated, the union leading to the great stability of the compound as such. On the addition of water, however, some of the constituent fibres or strands of the bundle become deflected in such a way that the sodium